Image AF 1763

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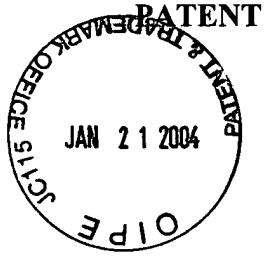

CERTIFICATE OF MAILING

I hereby certify that this correspondence (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-14501.

Date: 1-16-04 Himanshu S. Amin

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:

Applicant(s): Cyrus E. Tabery, *et al.*

Serial No: 09/955,517

Filing Date: September 18, 2001

Examiner: Parviz Hassanzadeh

Art Unit: 1763

Title: IN-SITU OR EX-SITU PROFILE MONITORING OF PHASE OPENINGS ON ALTERNATING PHASE SHIFTING MASKS BY SCATTEROMETRY

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPEAL BRIEF

Dear Sir:

Applicants submit this brief in triplicate in connection with an appeal of the above-identified patent application. The Commissioner is authorized to deduct $330.00 for the fee associated with this brief from Deposit Account No. 50-1063 [AMDP753US].

I. Real Party in Interest (37 C.F.R. §1.192(c)(1))

The real party in interest in the present appeal is Advanced Micro Devices, Inc., the assignee of the present application.

II. Related Appeals and Interferences (37 C.F.R. §1.192(c)(2))

Appellants, appellants' legal representative, and/or the assignee of the present application are not aware of any appeals or interferences which will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. §1.192(c)(3))

Claims 1, 2, 4-20 and 25 are pending in the application. The rejection of claims 1, 2, 4-20 and 25 is being appealed.

IV. Status of Amendments (37 C.F.R. §1.192(c)(4))

Amendments to claims 1, 2, 4-14, 16-20 and 25 made after the final rejection dated July 21, 2003 have been entered for purposes of Appeal. No other claim amendments have been made since that time.

V. Summary of Invention (37 C.F.R. §1.192(c)(5))

The present invention relates to systems and methods for measuring the etching of substrate features (*e.g.,* apertures) associated with alternating aperture phase shift mask (AAPSM) fabrication utilizing a light based measuring system. (See page 4, lines 29-31). In general, the measuring system emits light onto the mask surface, the light reflected from the one or more apertures is indicative of at least one parameter (*e.g.,* dimension) of the mask fabrication process (*e.g.,* depth of opening, width of opening, trench wall slope). (*See* page 5, lines 14-16). The depth, width and/or trench wall angles are important to the fidelity of the image transfer process due to the effects on phase shifting and diffraction of the light. (*See* page 5, lines 17-18). Thus, measuring the depth, width and/or trench wall angles of the apertures in the mask enables fabrication of higher quality complementary phase shift masks as compared to conventional systems. (*See* page 5, lines 19-21).

VI. Statement of the Issues (37 C.F.R. §1.192(c)(6))

A. Whether claims 1, 2, 4-8, 15-20 and 25 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Latos (U.S. 4,208,240).

B. Whether claims 9-14 are unpatentable under 35 U.S.C. §103(a) as being unpatentable over Latos (U.S. 4,208,240) in view of Niu *et al.* (Specular Spectroscopic Scatterometry in DUV Lithography).

VII. Grouping of Claims (37 C.F.R. §1.192(c)(7))

For purposes of this appeal only, the claims are grouped as follows:

Claims 1, 2, 4-14; 15-20; and 25 stand or fall together.

VIII. Argument (37 C.F.R. §1.192(c)(8))

A. Rejection of Claims 1, 2, 4-8, 15-20 and 25 Under 35 U.S.C. §102(b)

Claims 1, 2, 4-8, 15-20 and 25 stand rejected under 35 U.S.C. §102(b) as being anticipated by Latos. Reversal of the rejection is respectfully requested for at least the following reasons.

i. Latos fails to disclose each and every element of claim 15 and amended claims 1, 2, 4-8, 16-20 and 25 in the present invention; therefore, Latos does not anticipate the present invention to one ordinarily skilled in the art.

> A single prior art reference anticipates a patent claim only if it expressly or inherently describes each and every limitation set forth in the patent claim. *Trintec Industries, Inc., v. Top-U.S.A. Corp.*, 295 F.3d 1292, 63 U.S.P.Q.2D 1597 (Fed. Cir. 2002); *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the ... claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Independent claim 1 (and similarly independent claims 15 and 25) recites a system for ***measuring*** the etching of features (*e.g.* apertures) associated with alternating aperture phase shift mask (AAPSM) fabrication utilizing a light based measuring system.

(*See* page 4, lines 29-31). In general, the measuring system emits light onto the mask surface, the light reflected from the one or more apertures is indicative of at least one parameter (*e.g.* dimension) of the mask fabrication process (*e.g.* depth of opening, width of opening, trench wall slope). (*See* page 5, lines 14-16). The depth, width and/or trench wall angles are important to the fidelity of the image transfer process due to the effects on phase shifting and diffraction of the light. (*See* page 5, lines 17-18). Thus, ***measuring the depth, width and/or trench wall angles*** of the apertures in the mask enables fabrication of higher quality complementary phase shift masks as compared to conventional systems. (*See* page 5, lines 19-21). Latos does not teach or suggest a ***measurement system*** that is employed to measure the ***feature parameters*** of apertures on an AAPSM, as recited in the subject claims. Rather, Latos discloses a system that obtains ***reflectivity*** of a substrate and discontinues etching after a ***pre-determined time*** has been reached.

In particular, the system disclosed in Latos does not disclose ***measuring feature parameters*** of an AAPSM as recited in the subject claims. Instead, Latos discloses a sensor that compares the ***reflectivity*** of one substrate to another. Latos utilizes a sensor (*e.g.* derivative detector) having a variable timer that continuously samples the ***reflected light*** and provide a control signal in response to a predetermined change in the characteristics of the ***light reflected***. Such a "method and apparatus...will detect a desired endpoint of etching through insulation to an underlying metal substrate [or] through metal to an underlying insulation substrate," for example. (*See* Abstract). Latos merely senses when one layer has been etched through to a disparate layer and acts as an "on-off" switch wherein the system detects one of two states. Thus, Latos does not teach or suggest ***measuring feature parameters*** regardless of surface ***reflectivity***, as recited in the subject claims.

In the Advisory Action dated October 28, 2003, Examiner states Latos discloses, "the end point of etching in the apparatus of Latos is a [sic] measured by monitored [sic] a change in amplitude of the measured signal which is ***indicative of the depth of the etched layer***." (Emphasis added). Applicants' representative respectfully disagrees. Merely monitoring a change in reflectivity to determine if one layer has been etched to another layer, does not measure depth (*e.g.*, feature parameter) as recited in the subject

claims. Rather Latos employs "a timer to...provide ***a control signal in response to a predetermined change in the characteristics of the light reflected,"*** and thus does not teach or suggest ***measuring a feature parameter*** as recited in the subject claims. (Emphasis added). For example, if the speed of an etching process varies, equivalent layer depths can cause surface reflectivity to change at different times. Thus, under Latos, measuring the depth of layers is dependent on the speed of the etching process as a feature parameter measurement tool. In contrast, the subject invention does not rely on "a predetermined change in the characteristic of the light reflected."

In view of at least the foregoing, it is respectfully submitted that Latos neither anticipates nor suggests applicants' invention as recited in independent claim 1, 15 and 25 (and claims 3-14 and 16-20 which depend therefrom), and this rejection should be withdrawn.

B. Rejection of Claims 9-14 Under 35 U.S.C. §103(a)

Claims 9-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Latos in view of Niu *et al.* Reversal of the rejection is respectfully requested for at least the following reasons.

i. Latos fails to teach or suggest claim 1 of the present invention and Niu et al. fails to make up for these deficiencies; claims 9-14 depend respectively from independent claim 1, and Niu et al. does not make up for the aforementioned deficiencies of Latos regarding claim 1.

> To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See* MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *See In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As noted above, independent claim 1 recites a system for measuring the etching of features (*e.g.* apertures) associated with alternating aperture phase shift mask (AAPSM) fabrication utilizing a light based measuring system. (*See* page 4, lines 29-31). In general, the measuring system emits light onto the mask surface, the light reflected from the one or more apertures is indicative of at least one parameter (*e.g.* dimension) of the mask fabrication process (*e.g.* depth of opening, width of opening, trench wall slope). (*See* page 5, lines 14-16). The depth, width and/or trench wall angles are important to the fidelity of the image transfer process due to the effects on phase shifting and diffraction of the light. (*See* page 5, lines 17-18). Thus, ***measuring the depth, width and/or trench wall angles*** of the apertures in the mask enables fabrication of higher quality complementary phase shift masks as compared to conventional systems. (*See* page 5, lines 19-21).

As noted above, Latos does not teach or suggest measuring feature parameters as recited in subject claim 1 and Niu, *et al.* fails to make up for such aforementioned deficiencies with respect to claims 9-14 which depend from independent claim 1. Instead Niu, *et al.* teaches a scatterometry system wherein a profile of a grating system is measured and compared to a predetermined profile.

For these reasons, and the reasons stated *supra*, Latos in combination with Niu, *et al.* does not teach, suggest or make obvious independent claim 1 (or claims 9-14 which depend therefrom). Accordingly, it is respectfully requested that this rejection be withdrawn.

IX. Conclusion

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1, 2, 4-20 and 25 be reversed.

If any additional fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Respectfully submitted,
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X. Appendix of Claims (37 C.F.R. §1.192(c)(9))

1. A system that measures an etch of a mask feature, comprising:

one or more fabricating components that fabricate one or more features on an alternating aperture phase shift mask;

a driving component that controls the one or more fabricating components;

an emitting component that directs light on to at least one of the features on the alternating aperture phase shift mask; and

an analysis component that measures one or more feature parameters based on a light reflected and/or refracted from the one or more features, the measured feature parameter utilized by the driving system to control the fabrication component during fabrication process and post-fabrication process in an alternating aperture phase shift mask.

2. The system of claim 1, comprising a processor operatively coupled to the measuring system and the fabricating component driving system.

4. The system of claim 1, the fabricating components are etching components.

5. The system of claim 1, the features comprise at least one of an aperture and a grating.

6. The system of claim 1, the analysis component comprises a scatterometry system for processing the light reflected from the one or more features.

7. The system of claim 1, the fabricating components are etching components.

8. The system of claim 1, the features comprise at least one of an aperture and a grating.

9. The system of claim 1, the processor maps the mask into a plurality of grid blocks and makes a determination of fabrication conditions at the one or more grid blocks.

10. The system of claim 1, the fabrication conditions comprise at least one of the depth, width and profile of the features.

11. The system of claim 1, the processor determines the existence of an unacceptable fabrication condition for the one or more features based upon a determined feature signature differing from an acceptable feature signature.

12. The system of claim 2, the processor controls the one or more fabricating components to regulate fabricating the one or more features on the mask.

13. The system of claim 1, the features comprise at least one of an aperture and a grating.

14. The system of claim 1, the fabricating components are etching components.

15. A system for monitoring the profile of an aperture on an alternating aperture phase shift mask, the system comprising:

a system for directing light onto an alternating aperture phase shift mask; and

a measuring system for measuring one or more aperture parameters based on a light reflected from the aperture.

16. The system of claim 15, the aperture parameters comprise at least one of aperture depth, aperture width and aperture wall slope.

17. The system of claim 15, comprising a processor adapted to receive aperture data from the measuring system and to facilitate determining whether the alternating aperture phase shift mask has been fabricated within one or more pre-determined tolerances.

18. The system of claim 17, the pre-determined tolerances comprise at least one of aperture depth, aperture width and aperture wall slope.

19. The system of claim 15, the measuring system comprises a scatterometry system for processing the light reflected from an aperture to determine an aperture signature.

20. The system of claim 15, the processor determines whether the mask has been fabricated within one or more pre-determined tolerances based upon a determined aperture signature differing from an acceptable aperture signature.

25. A system for controlling a process for etching openings in an alternating aperture phase shift mask, comprising:

means for sensing at least one of the shape, location, depth, width and opening wall slopes of one or more apertures on the alternating aperture phase shift mask;

means for etching one or more apertures on the alternating aperture phase shift mask; and

means for selectively controlling the etching of the one or more apertures based on analysis of data collected by the means for sensing the shape, location, depth, width and opening wall slopes of the one or more apertures.

PATENT G0228

CERTIFICATE OF MAILING

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Date: 1-16-04 Himanshu S. Amin

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:	
Applicant(s): Cyrus E. Tabery, *et al.*	Examiner: Parviz Hassanzadeh
Serial No: 09/955,517	Art Unit: 1763
Filing Date: September 18, 2001	

Title: IN-SITU OR EX-SITU PROFILE MONITORING OF PHASE OPENINGS ON ALTERNATING PHASE SHIFTING MASKS BY SCATTEROMETRY

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPEAL BRIEF

Dear Sir:

Applicants submit this brief in triplicate in connection with an appeal of the above-identified patent application. The Commissioner is authorized to deduct $330.00 for the fee associated with this brief from Deposit Account No. 50-1063 [AMDP753US].

I. Real Party in Interest (37 C.F.R. §1.192(c)(1))

The real party in interest in the present appeal is Advanced Micro Devices, Inc., the assignee of the present application.

II. Related Appeals and Interferences (37 C.F.R. §1.192(c)(2))

Appellants, appellants' legal representative, and/or the assignee of the present application are not aware of any appeals or interferences which will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims (37 C.F.R. §1.192(c)(3))

Claims 1, 2, 4-20 and 25 are pending in the application. The rejection of claims 1, 2, 4-20 and 25 is being appealed.

IV. Status of Amendments (37 C.F.R. §1.192(c)(4))

Amendments to claims 1, 2, 4-14, 16-20 and 25 made after the final rejection dated July 21, 2003 have been entered for purposes of Appeal. No other claim amendments have been made since that time.

V. Summary of Invention (37 C.F.R. §1.192(c)(5))

The present invention relates to systems and methods for measuring the etching of substrate features (*e.g.*, apertures) associated with alternating aperture phase shift mask (AAPSM) fabrication utilizing a light based measuring system. (See page 4, lines 29-31). In general, the measuring system emits light onto the mask surface, the light reflected from the one or more apertures is indicative of at least one parameter (*e.g.*, dimension) of the mask fabrication process (*e.g.*, depth of opening, width of opening, trench wall slope). (*See* page 5, lines 14-16). The depth, width and/or trench wall angles are important to the fidelity of the image transfer process due to the effects on phase shifting and diffraction of the light. (*See* page 5, lines 17-18). Thus, measuring the depth, width and/or trench wall angles of the apertures in the mask enables fabrication of higher quality complementary phase shift masks as compared to conventional systems. (*See* page 5, lines 19-21).

VI. Statement of the Issues (37 C.F.R. §1.192(c)(6))

A. Whether claims 1, 2, 4-8, 15-20 and 25 are unpatentable under 35 U.S.C. §102(b) as being anticipated by Latos (U.S. 4,208,240).

B. Whether claims 9-14 are unpatentable under 35 U.S.C. §103(a) as being unpatentable over Latos (U.S. 4,208,240) in view of Niu *et al.* (Specular Spectroscopic Scatterometry in DUV Lithography).

VII. Grouping of Claims (37 C.F.R. §1.192(c)(7))

For purposes of this appeal only, the claims are grouped as follows:

Claims 1, 2, 4-14; 15-20; and 25 stand or fall together.

VIII. Argument (37 C.F.R. §1.192(c)(8))

A. Rejection of Claims 1, 2, 4-8, 15-20 and 25 Under 35 U.S.C. §102(b)

Claims 1, 2, 4-8, 15-20 and 25 stand rejected under 35 U.S.C. §102(b) as being anticipated by Latos. Reversal of the rejection is respectfully requested for at least the following reasons.

i. Latos fails to disclose each and every element of claim 15 and amended claims 1, 2, 4-8, 16-20 and 25 in the present invention; therefore, Latos does not anticipate the present invention to one ordinarily skilled in the art.

> A single prior art reference anticipates a patent claim only if it expressly or inherently describes each and every limitation set forth in the patent claim. *Trintec Industries, Inc., v. Top-U.S.A. Corp.*, 295 F.3d 1292, 63 U.S.P.Q.2D 1597 (Fed. Cir. 2002); *See Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ 2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the ... claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Independent claim 1 (and similarly independent claims 15 and 25) recites a system for ***measuring*** the etching of features (*e.g.* apertures) associated with alternating aperture phase shift mask (AAPSM) fabrication utilizing a light based measuring system.

(*See* page 4, lines 29-31). In general, the measuring system emits light onto the mask surface, the light reflected from the one or more apertures is indicative of at least one parameter (*e.g.* dimension) of the mask fabrication process (*e.g.* depth of opening, width of opening, trench wall slope). (*See* page 5, lines 14-16). The depth, width and/or trench wall angles are important to the fidelity of the image transfer process due to the effects on phase shifting and diffraction of the light. (*See* page 5, lines 17-18). Thus, ***measuring the depth, width and/or trench wall angles*** of the apertures in the mask enables fabrication of higher quality complementary phase shift masks as compared to conventional systems. (*See* page 5, lines 19-21). Latos does not teach or suggest a ***measurement system*** that is employed to measure the ***feature parameters*** of apertures on an AAPSM, as recited in the subject claims. Rather, Latos discloses a system that obtains ***reflectivity*** of a substrate and discontinues etching after a ***pre-determined time*** has been reached.

In particular, the system disclosed in Latos does not disclose ***measuring feature parameters*** of an AAPSM as recited in the subject claims. Instead, Latos discloses a sensor that compares the ***reflectivity*** of one substrate to another. Latos utilizes a sensor (*e.g.* derivative detector) having a variable timer that continuously samples the ***reflected light*** and provide a control signal in response to a predetermined change in the characteristics of the ***light reflected***. Such a "method and apparatus...will detect a desired endpoint of etching through insulation to an underlying metal substrate [or] through metal to an underlying insulation substrate," for example. (*See* Abstract). Latos merely senses when one layer has been etched through to a disparate layer and acts as an "on-off" switch wherein the system detects one of two states. Thus, Latos does not teach or suggest ***measuring feature parameters*** regardless of surface ***reflectivity***, as recited in the subject claims.

In the Advisory Action dated October 28, 2003, Examiner states Latos discloses, "the end point of etching in the apparatus of Latos is a [sic] measured by monitored [sic] a change in amplitude of the measured signal which is ***indicative of the depth of the etched layer***." (Emphasis added). Applicants' representative respectfully disagrees. Merely monitoring a change in reflectivity to determine if one layer has been etched to another layer, does not measure depth (*e.g.*, feature parameter) as recited in the subject

claims. Rather Latos employs "a timer to...provide ***a control signal in response to a predetermined change in the characteristics of the light reflected,"*** and thus does not teach or suggest ***measuring a feature parameter*** as recited in the subject claims. (Emphasis added). For example, if the speed of an etching process varies, equivalent layer depths can cause surface reflectivity to change at different times. Thus, under Latos, measuring the depth of layers is dependent on the speed of the etching process as a feature parameter measurement tool. In contrast, the subject invention does not rely on "a predetermined change in the characteristic of the light reflected."

In view of at least the foregoing, it is respectfully submitted that Latos neither anticipates nor suggests applicants' invention as recited in independent claim 1, 15 and 25 (and claims 3-14 and 16-20 which depend therefrom), and this rejection should be withdrawn.

B. Rejection of Claims 9-14 Under 35 U.S.C. §103(a)

Claims 9-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Latos in view of Niu *et al.* Reversal of the rejection is respectfully requested for at least the following reasons.

i. Latos fails to teach or suggest claim 1 of the present invention and Niu et al. fails to make up for these deficiencies; claims 9-14 depend respectively from independent claim 1, and Niu et al. does not make up for the aforementioned deficiencies of Latos regarding claim 1.

> To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *See* MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *See In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As noted above, independent claim 1 recites a system for measuring the etching of features (*e.g.* apertures) associated with alternating aperture phase shift mask (AAPSM) fabrication utilizing a light based measuring system. (*See* page 4, lines 29-31). In general, the measuring system emits light onto the mask surface, the light reflected from the one or more apertures is indicative of at least one parameter (*e.g.* dimension) of the mask fabrication process (*e.g.* depth of opening, width of opening, trench wall slope). (*See* page 5, lines 14-16). The depth, width and/or trench wall angles are important to the fidelity of the image transfer process due to the effects on phase shifting and diffraction of the light. (*See* page 5, lines 17-18). Thus, ***measuring the depth, width and/or trench wall angles*** of the apertures in the mask enables fabrication of higher quality complementary phase shift masks as compared to conventional systems. (*See* page 5, lines 19-21).

As noted above, Latos does not teach or suggest measuring feature parameters as recited in subject claim 1 and Niu, *et al.* fails to make up for such aforementioned deficiencies with respect to claims 9-14 which depend from independent claim 1. Instead Niu, *et al.* teaches a scatterometry system wherein a profile of a grating system is measured and compared to a predetermined profile.

For these reasons, and the reasons stated *supra*, Latos in combination with Niu, *et al.* does not teach, suggest or make obvious independent claim 1 (or claims 9-14 which depend therefrom). Accordingly, it is respectfully requested that this rejection be withdrawn.

IX. Conclusion

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1, 2, 4-20 and 25 be reversed.

If any additional fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Respectfully submitted,
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X. Appendix of Claims (37 C.F.R. §1.192(c)(9))

1. A system that measures an etch of a mask feature, comprising:

one or more fabricating components that fabricate one or more features on an alternating aperture phase shift mask;

a driving component that controls the one or more fabricating components;

an emitting component that directs light on to at least one of the features on the alternating aperture phase shift mask; and

an analysis component that measures one or more feature parameters based on a light reflected and/or refracted from the one or more features, the measured feature parameter utilized by the driving system to control the fabrication component during fabrication process and post-fabrication process in an alternating aperture phase shift mask.

2. The system of claim 1, comprising a processor operatively coupled to the measuring system and the fabricating component driving system.

4. The system of claim 1, the fabricating components are etching components.

5. The system of claim 1, the features comprise at least one of an aperture and a grating.

6. The system of claim 1, the analysis component comprises a scatterometry system for processing the light reflected from the one or more features.

7. The system of claim 1, the fabricating components are etching components.

8. The system of claim 1, the features comprise at least one of an aperture and a grating.

9. The system of claim 1, the processor maps the mask into a plurality of grid blocks and makes a determination of fabrication conditions at the one or more grid blocks.

10. The system of claim 1, the fabrication conditions comprise at least one of the depth, width and profile of the features.

11. The system of claim 1, the processor determines the existence of an unacceptable fabrication condition for the one or more features based upon a determined feature signature differing from an acceptable feature signature.

12. The system of claim 2, the processor controls the one or more fabricating components to regulate fabricating the one or more features on the mask.

13. The system of claim 1, the features comprise at least one of an aperture and a grating.

14. The system of claim 1, the fabricating components are etching components.

15. A system for monitoring the profile of an aperture on an alternating aperture phase shift mask, the system comprising:

a system for directing light onto an alternating aperture phase shift mask; and

a measuring system for measuring one or more aperture parameters based on a light reflected from the aperture.

16. The system of claim 15, the aperture parameters comprise at least one of aperture depth, aperture width and aperture wall slope.

17. The system of claim 15, comprising a processor adapted to receive aperture data from the measuring system and to facilitate determining whether the alternating aperture phase shift mask has been fabricated within one or more pre-determined tolerances.

18. The system of claim 17, the pre-determined tolerances comprise at least one of aperture depth, aperture width and aperture wall slope.

19. The system of claim 15, the measuring system comprises a scatterometry system for processing the light reflected from an aperture to determine an aperture signature.

20. The system of claim 15, the processor determines whether the mask has been fabricated within one or more pre-determined tolerances based upon a determined aperture signature differing from an acceptable aperture signature.

25. A system for controlling a process for etching openings in an alternating aperture phase shift mask, comprising:

means for sensing at least one of the shape, location, depth, width and opening wall slopes of one or more apertures on the alternating aperture phase shift mask;

means for etching one or more apertures on the alternating aperture phase shift mask; and

means for selectively controlling the etching of the one or more apertures based on analysis of data collected by the means for sensing the shape, location, depth, width and opening wall slopes of the one or more apertures.